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of these objects, for in this way we may widen the scope and usefulness of paleontology.

The most notable advance, so far as I am aware, which has been made in this direction, is the work of B. Renault, who, in his large work "*Microorganismes des combustibles fossiles*"¹ has described and figured the bacteria, fungi and other pathogenic forms in the coprolites of fishes and in the coal of the Autun basin. I wish here to call attention to this really epoch-making work, with the thought that there might be others like myself, who were not aware of the existence of this important memoir. I am indebted to Mr. David White for calling my attention to this work and for loaning the volumes containing the memoir. The work is illustrated by 20 folio plates of untouched photomicrographs of bacteria, fungi, etc., and so conclusive is the evidence found there that no one can doubt Renault's conclusions. It is to the coprolites, or fossil feces, that the medical man would turn for evidences of disease and our author has figured and described in coprolites from the fishes of the Autun formations, many interesting colonies of bacteria, fungus growths, cultures of bacilli, organisms analogous to those producing caries of the teeth and many other important features of Mesozoic bacteriology. Some photomicrographs of fossil bone, obtained from the coprolites, showing the ravages of bacteria in the canaliculi, and bone corpuscles, are especially interesting.

So far as Mesozoic pathology is concerned the writer will describe and figure elsewhere a pathological growth involving two caudal vertebrae of a sauropodous dinosaur from the Como Beds of Wyoming. The original specimen belongs to the University of Kansas and I am indebted to Mr. H. T. Martin for the privilege of studying it. The growth looks remarkably like recent bone growths due to chronic osteomyelitis, or a bone tumor, or a callous growth possibly due to a fracture of the tail.

¹ *Bulletin de la Société de l'Industrie minière Saint-Etienne*, Série III., 1899, Tome 13, pp. 865-1,161; 14 (1-2), pp. 5-159, 1900, with Atlas 1898-99, Pl. X.-XXV.; Atlas 1900-01, Pl. I.-V.

Williston² has figured the bones of the arm of a mosasaur showing pathological growth and synostosis of the carpals, possibly due to some infection. In the museum of the University of Kansas there is a mosasaur paddle showing extensive synostoses due either to disease or fracture.

It is interesting to note the possibilities open to paleontologists for the study of fossil remains. It is too early to say that a new field of research is opened up which will yield important results, but certainly such discoveries as may be made in this field of study will be of the greatest interest to those who are studying the activity and nature of modern diseases.

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EFFICIENT SUMMER VACATIONS

THE late Mr. Taylor, efficiency expert extraordinary, once suggested that the pupils of technical schools be required to spend at least one year in commercial shop employment before they graduated. The opening, by Professor Riesman,¹ of the question of what to do with the summer vacation makes this an opportune time to suggest that the idea of compulsory practical experience is too good a one to go by default. But, three periods of three months each, in different plants and in positions of responsibility increasing with the growth of the student, seem to have many superior advantages and I venture to suggest the university control of its students during the summer period and a cooperation between educational and industrial institutions that shall furnish each student with a summer's work complementing that of the school year.

It should be as impossible as it is unnecessary for any student enrolled in a technical or scientific school to waste three months each summer. The graduates who go to work "in the South and Mid-Atlantic region" will not be excused by their employers from work during the summer because it is "out of the

² *Geol. Surv. Kansas*, Vol. IV., Plate LVI., Figs. 3 and 5, 1898.

¹ *SCIENCE*, February 25, 1916, p. 277.

question." Without detracting from the ultimate desirability of some such scheme as that proposed by Professor Riesman, may it not be more easy and advisable for us at once to adopt the principle of planning for the effective use of the summer vacation by all students in our technical schools, and of making three such periods a prerequisite for graduation? Our students will not be deprived of any more life, liberty and the pursuit of happiness than they will have to relinquish when they do graduate if we give them two vacation periods of approximately two weeks each, one immediately following the end of the school year, the other immediately preceding the next.

The chief objection to this scheme will come from those who want the summer for play—a class for whom we are not planning our college work—and those teachers who will claim that it is impossible to place the men. "Why?" "Oh, because industry doesn't want them." "Well then, train men who will be in demand; our best equipped institutions meet with little difficulty."

The scheme outlined has the merit of being the ideal toward which many of our institutions are even now striving, but complete success demands the wholeheartedness of combined effort and determination.

LANCASTER D. BURLING

GEOLOGICAL SURVEY OF CANADA

GERMAN GEOLOGISTS AND THE WAR

TO THE EDITOR OF SCIENCE: Some idea of the terrible way in which the war is depleting the ranks of German men of science can be gained from a study of the lists of German and Austrian geographers and geologists enrolled in military organizations which have been published in the "Geologische Rundschau." These lists, which can be found in the numbers published on December 8, 1914, February 26, 1914 and December 14, 1915, combined with a short list in the November, 1915, number of *Der Geologe*, contain a total of 237 names. Of this total, 54 are reported killed and two missing and probably dead, a mortality of almost twenty-five per cent.

The number of the *Geologische Rundschau*

just received (published on December 14, 1915), contains portraits and obituaries of three young German geologists who are well known to many of the profession in this country through their participation in the excursions and meetings of the Twelfth International Geological Congress held in Canada in the summer of 1913. They are Curt Alfons Haniel, privatdozent in geology and paleontology in the University of Bonn, killed in action near Laon on December 29, 1914; Siegfried Martius, assistant in the Mineralogical-Petrographical Institute at Bonn, fatally wounded at Ypres on October 23, 1914; and Adolf A. Riedel, a student just completing the work for his doctorate at Munich, a man of unusually attractive personality and of great intellectual promise, who was killed in northern France on November 21, 1914. Another participant in the International Congress, Dr. Wilhelm Paulcke, of Karlsruhe, has been reported wounded and the recipient of the Iron Cross.

A further indication of the serious character of the German losses is given by the statement of the last number of *Der Geologe* (November, 1915) that 75 of the personnel of the Royal Prussian Department of Mines had lost their lives up to April 1, 1915. This periodical also reports that Dr. Quitzow, editor of *Der Geologe* and *Der Geologen-Kalender* had not been heard from for a year, after being in action on the eastern front.

WALTER L. BARROWS

TRINITY COLLEGE,
March 14, 1916

SCIENTIFIC BOOKS

The Feebly Inhibited: Nomadism, or the Wandering Impulse, with Special Reference to Heredity: Inheritance of Temperament.
BY CHARLES B. DAVENPORT.

The author argues that "all cases of nomadism can be ascribed to one fundamental cause—that those who show the trait belong to the nomadic race" made up of those possessed of the nomadic impulse. This impulse "depends upon the absence of a simple sex-linked gene that 'determines' domesticity." The data for the argument are family-histor-